CHAPTER 2E

ESTABLISHING GRASS AND PLANT MATERIAL

2E-01. GENERAL

This chapter covers the materials and procedures required for installing and establishing seed, sod, sprigs and plant material.

2E-02. ESTABLISHING GRASS

a. Delivery, Storage. Handling

(1) Verify the material upon arrival at the site as meeting quality in accordance with the section, "MATERIALS", 2E-02.b.

(2) Determine the storage area for turf and materials.

(3) Ensure the sod and sprigs are protected from desiccation by keeping them moist and protected from injury.

b. Materials

(1) Seed

(a) Obtain the certificate of compliance for the mixture, percent pure live seed, minimum percent germination and hard seed, maximum percent weed seed content, date tested and state certification.

(b) Reject wet, moldy or otherwise damaged seed.

(2) Sod

(a) Obtain the certificate of compliance stating the variety, species, mixture percentage, percent purity, quality grade growing location and certification. The source of sod may be checked to determine local growing conditions for compatibility with the project.

(b) Check the sod for no visible broadleaf weeds when reviewed from a standing position. The turf should be visibly consistent with no obvious patches of foreign grasses. In no case may the total amount of foreign grasses or weeds exceed two percent of the total canopy. The sod should be neatly mowed and mature enough to be picked up at one end and handled without damage.

(c) Check that the thickness of the sod is in accordance with the inspection and shows uniform soil thickness. The measurement for thickness excludes the top growth and thatch.

(d) Reject irregularly shaped, torn or uneven sod.

(e) Reject sod that is heating up, dry, moldy or yellow.

(3) Sprigs

(a) Obtain the certificate of compliance stating the cultivar, genetic purity and growing location.

(b) Check that attached roots have two or three nodes and are four to six inches in length. Ensure no weeds exist with the sprigs.

(c) Reject sprigs that are exposed to heat, dry, moldy or yellow.

(4) Soil amendments

(a) Agricultural Limestone. Obtain the certificate of compliance stating the calcium carbonate equivalent and sieve analysis.

1. Check that the limestone is delivered in the original and unopened containers.

2. Reject open limestone containers or wet limestone.

(b) Fertilizer. Obtain the certificate of compliance stating the chemical analysis and composition percent.

1. Check that the fertilizer is delivered in the original and unopened containers.

2. Reject open fertilizer containers or wet fertilizer.

(c) Organic Soil Amendments

1. Delivered Topsoil

a. Obtain a soil test stating the pH, particle size, chemical analysis and mechanical analysis of the delivered top soil.

b. Verify the topsoil is either loamy sand, sandy loam, clay loam, loam, silt loam or sandy clay loam without subsoil, slag, cinders, stones, lumps of soil, sticks, roots, trash or other material larger than one and one-half inch in diameter. The topsoil should be free from viable plants or plant parts.

c. Check that the delivered topsoil is amended as recommended by the soil test.

2. Sand. Obtain the sieve analysis.

(d) Mulch

1. Straw and Hay. Check for freedom from weeds, mold and other deleterious material and for an air dry condition.

2. Wood Cellulose Fiber. Check for composition on air dry weight basis and for pH.

(e) Asphalt Adhesive. Obtain the certificate of compliance to meet the ASTM.

c. Planting Times And Conditions

(1) Planting times

(a) Check that the seasonal requirements for the establishment of turf are being met in the contract work schedule.

(b) Check phased construction requirements for temporary turf cover.

(2) Planting conditions

(a) Check for favorable soil and weather conditions to give beneficial results.

(b) Stop the planting operation during excessive drought, moisture, wind or other unfavorable condition. Stop the planting operation when there is excessive compaction of the soil from interim rain or construction equipment.

d. Site Preparation

(1) Equipment

(a) Check the type, condition and calibration of the equipment to be used.

(b) Record the calibration settings.

(2) Soil Test. Obtain a soil test stating the pH, particle size, chemical analysis and mechanical analysis for the area to be turf ed. When stockpiled topsoil is spread over the turf area, it also requires a soil test.

(3) Application of soil amendments

(a) Check that the soil is amended in accordance with recommendations of the soil test to meet the local growing conditions for the variety and species os turf specified.

(b) Soil amendments may be incorporated into the soil during tillage.

(4) Fertilizer and Agricultural Limestone

(a) Check the bag label with the certificate of compliance.

(b) Check the rate of application.

(c) Check that the fertilizer and limestone are incorporated in the soil to a minimum depth of four inches.

(5) Soil conditioner

(a) Check the bag label or invoice with the certificate of compliance.

(b) Check the rate and depth of application.

(c) Check that the soil conditioner is spread uniformly over the area and incorporated in the soil.

(6) Quantity check

(a) Retain empty bags and record amounts used.

(b) Retain weight certificates for bulk loads and record amounts used.

(c) Compare the amounts used with the total area covered with soil amendments.

(7) Tillage

(a) Check time limitation when soil amendments are to be incorporated into the soil during tillage.

(b) Check the minimum depth of tillage on slopes.

(8) Placement of topsoil

(a) Check the total requirement for topsoil. Ensure the quality of the topsoil meets the certificate of compliance.

(b) Check the method and depth of placement.

(c) Check for even distribution over the area.

(d) Check that compaction of soil is prevented.

(9) Finished grading

(a) Check that the drainage patterns are in accordance with the drawings and the grades slope a minimum one percent from buildings and facilities.

(b) Check that the finished graded area is a minimum of one inch below the adjoining grade of surface areas (walks, pavements) and is blended into the existing turf area.

(c) Check that all areas compacted by construction equipment are tilled.

(d) Check that the completion of finished grading occurs prior to commencing with the establishment of turf.

(e) Removal of stone and debris

1. Lawn area. Check that debris and stones larger that one inch in any dimension are removed.

2. Field area. Check that debris and stones larger than three inches in any dimension are removed.

(10) Protection. Check that existing turf areas, plant material, pavement and facilities (to include the tilled areas) are protected from damage by the contractor.

e. Seeding

(1) Equipment

(a) Check the type, condition and calibration of the equipment to be used.

(b) Record the calibration settings.

(2) Field mixing. Observe the field mixing of seed.

(3) Broadcast seeding.

(a) Check the bag label with the certificate of compliance.

(b) Check the rate of application.

(c) Ensure the broadcast seed is covered to an average depth of one-quarter inch.

(4) Drill seeding

(a) Check the bag label with the certificate of compliance.

(b) Check the rate of application.

(c) Ensure the seed is driulled to an average depth of one—half inch, the drills not more than six and one—half inches apart and seed bins on the drill are maintained at more than one-half full during seeding.

(5) Rolling. Check that rolling occurs immediately after seeding, and the roller does not exceed ninety pounds for each foot of roller width.

(6) Hydroseeding

(a) Check the bag label with the certificate of compliance.

(b) Check the rate of application.

(c) Check that seed and fertilizer are thoroughly mixed with the water.

(d) Check that the wood cellulose fiber is added to the mixture at the recommended rates and produces a homogenous slurry.

(e) Check that mixture is applied uniformly over the area within time limitation.

(f) Reject slurry exceeding this period.

(7) Mulch

(a) Spreading straw or hay mulch. Check that mulch is applied the same day as the area is seeded and applied uniformly to the area and not bunched or matted.

1. Mechanically anchoring. Check that anchoring occurs immediately following the spreading of mulch. Check the method to be used for anchoring mulch.

2. Anchoring with tackifier.

a. Asphalt adhesive tackifier. Check that anchoring occurs immediately following the spreading of mulch, and sunlight is not completely excluded from penetration to the ground surface.

b Non-Asphaltic tackifier. Check that anchoring occurs immediately following the spreading on mulch. Ensure the hydrophilic colloid is thoroughly mixed with water and applied uniformly over the area.

(b) Spreading Asphalt Adhesive Coated Mulch . Ensure mulch is applied the same day as the area is seeded, uniformly to the area and not bunched or matted, and sunlight is not completely excluded from penetration to the ground surface.

(8) Watering

(a) Verify that the quality of water is not toxic to plant life.

(b) Check the time limitation for watering.

(c) Check the rate of application to meet moist soil conditions to a minimum depth of one inch. Ensure the prevention of run-off and pudding.

(9) Quantity check

(a) Retain empty bags and recorf amounts used.

(b) Retain weight certificates for bulk loads and record amounts used.

(c) Compare the amounts used with the total area established with seed.

f. Sodding

(1) Check time limitation is met between harvestimg and placing sod. Sod not installed within this period requires checking for quality and approval prior to placement.

(2) Placing sod

(a) Check the sod with the certificate of complance.

(b) Prior to placing sod, ensure adequate soil moisture exists to a minimum depth of one inch.

(c) Check that rows of sod are parallel and tightly placed against each other with joints staggered and tightly butted.

(d) Check that the sod is laid at right angles to the slope, and at right angles to the flow of water in drainage ways.

(e) Check that the sod strips are not stretched or overlapped and anchored when required.

(f) Reject sod that shows heating up or desiccation.

(3) Finishing

(a) Check that the sod is rolled to remove air pockets andto smooth the surface.

(b) Check that frayed edges are trimmed and holes or missing corners are patched.

(4) Watering

(a) Verify that the quality of water is not toxic to plant life.

(b) Check time limitation for watering.

(c) Check the rate of application to ensure moist soil conditions to a minimum of one inch. Ensure the prevention of run-off and pudding.

(5) Quality check

(a) Verify the area covered with sod.

(b) Compare the quantity of sod used with the total area established with sod.

g. Sprigging

(1) Equipment

(a) Check the type, condition and calibration of the equipment to be used.

(b) Record the calibration settings.

(2) Check that the time limitation is met between harvesting and placing sprigs. Sprigs not installed within this period require checking and approval prior to placement.

(3) Broadcast sprigging

(a) Check the plants with the certificate of complance.

(b) Check the method of application.

(c) Check that the sprigs are planted to meet specification and drawing requirements, such as the number of sprigs per square yard, the spacing between sprigs and the depth of the sprigs.

(4) Hydroplanting

(a) Check the plants with the certificate of complance.

(b) Check that sprigs and water are thoroughly mixed and applied uniformly over the area.

(c) Check that sprigs are covered by a topdressing to a minimum depth of one inch.

(d) Check that the topdressing meets the requirements stated in section, “DELIVERED TOPSOIL,” 2E-02b.(4)(c)l.

(5) Row sprigging

(a) Check the plants with the certificate of complence.

(b) Check the method of application.

(c) Check that the sprigs are planted to meet specification and drawing requirements, such as the spacing between rows, the spacing between sprigs, and the depth of the sprigs.

(6) Overseeding

(a) Check the bag label with the certificate fc complance.

(b) Check the rate of application. Ensure seed is uniformly broadcast over the sprigged area.

(c) Make similar checks as stated in section SEEDING," 2E-02e. Overseeding provides a quick green up and mulch is not necessary.

(7) Rolling

(a) Check that rolling occurs immediately after sprigging to remove air pockets and to anchor the sprigs, and the roller does not exceed ninety pounds for each foot of roller width.

(8) Finishing

(a) Check that the finished surface is flush with the finished grade.

(b) Check that twenty—five percent of each sprig plant length extends above soil.

(9) Watering. Make similar check as stated in section, "WATERING, 2E-02f.(4).

(10) Quantity check. Make similar check as stated in section, "QUANTITY CHECK," 2E-02f.(5).

h. Temporary Turf Cover (When Required)

(1) Conditions

(a) Check the conditions requiring a temporary turf cover.

(b) Verify the area requiring temporary turf cover.

(c) Check the type, condition and calbration of the equipment to be used.

(d) Record the calbration settings.

(2) Application

(a) Check the bag label with the certificate of complance.

(b) Check the rate of application.

(c) Check that the method of application meets the requirements stated is section, "SWEEDING," 2E-02e.

(d) Check that the area is tilled and one-half of the required soil amendments are applied. The remaining soil amendments are applied when the permanent turf can be installed.

(e) Make similar checks for watering as stated in section, "WATERING," 2E-02e.(8).

(3) Quantity check. Make similar checks as stated in section, "QUANTITY CHECK," 2E-02e.(9).

i. Restoration. Clean Up. Protection

(1) Restoration. Check that the existing turf areas, pavements and facilities damaged during the turf operation are restored to orginal condition at the Contractor*s expense.

(2) Cleanup. Ensure excess and *waste* material are removed and disposed off site. Ensure adjacemt paved areas are cleaned.

(3) Protection. Ensure each area is protected from vehicular and pedestrian traffic immediately upon completion.

j. Turf Establishment period

1) Commencement

(a) Record the commencement date and length of the period for each turfed area or increment.

(b) Check the method used to identify the areas with different establishment periods.

(2) Maintenance during the establishment period

(a) Repair. Check that eroded, damaged or barren areas are re—established. Ensure mulch is repaired or replaced as required; Check embankments, ditches and the turfed area are protected from erosion. Check that weeds, insects and diseases are eradicated. Obtain the maintenance report.

(b) Mowing

1. Check the method and frequency of mowing. Check that the turf is mowed to the proper height for the species planted.

2. Check that the clippings are removed when the cut grass leaves large clumps blocking out sunlight to the ground surface.

(c) Watering. Make similar check as stated in section, ‘WATERING,* 2E-02e.(8).

(d) Post-fertilization

1. Check thatt a nitrogen carrier fertilizer is applied after the first month and the rate of application.

2. Check the timing of the application with the advent of winter dormancy.

k. Satisfactory Stand Of Turf

(1) Seeded area

(a) Lawn area. Check that a minimum number of fifteen turf plants per square foot ot the species planted are growing and bare spots are less than six inches square.

(b) Field area. Check that a minimum number of ten turf plants per square foot of the species planted are growing and bare spots are less than six inches square.

(2) Sodded area. Check that the sod is living, uniform incolor and leaf texture and that bare spots are less than two inches square.

(3) Sprigged area. Check that a minimum number of two turf plants per square foot of the species planted are growing and bare spots are less than nine inches square.

2E-03. ESTABLISHING PLANT MATERIAL

a. Delivery. Storage. Handling

(1) verify the material upon arrival at the site as meeting quality in accordance with section, "MATERIALS", 2E-03.b.

(2) Determine the storage area for plant materials.

(3) Check that plant material is stored away from other materials and contaminates.

(4) Check that the palnt material is protected from desiccation and injury; bare root plant material is heel—in; and that the soil amendments are delivered in the orginal and unopened containers.

(5) Check that plant material not installed on day of arrival at the site is stored and protected from exposure to wind and shaded from the sun.

b. Materials

(1) Plant material

(a) Obtain the certificate of compliance stating the botanical and common name, size, quantity by species, grade and nursery where grown.

(b) Check that substitutions do not occur without written approval.

(c) Quality of plants

1. Check that plant material is well shaped, vigorous and healthy with healthy well branched root systems.

2. Check that plant material is free from diseas, harmful insects and insect eggs, sun-scald injury, disfigurement and abrasion.

3. Check that plant material exhibits typical form of branch to height ratio for the species and variety specified as stated in the referenced, “American Standard for Nursery Stock.”

4. Check that plant material provided meets the quality stated in the referenced, “American Standard for Nursery Stock” and specifications for species and veriety specified.

5. Reject plant material showing desiccation, abrasion, sun-scald injury or disfigurement.

6. Reject trees that are poled, topped off or headed back.

(d) Size of plants

1. Check the caliper and height measurement of plant material in accordance with the referenced, “American Standard for Nursery Stock.”

2. Caliper equals diameter.

3. Reject plant material that measures less than specified.

(e) Antidesiccant. Check that the plant material is sprayed with an antidesiccant when leaf budding occurs or plant material has soft growth.

(2) Balled and burlapped plants

(a) Check that the ball size and ratio meets the referenced, “American Standard for Nursery Stock.”

(b) Check that the root ball is completely wrapped and securely laced.

(c) Reject plant material with briken or cracked balls.

(3) Balled and potted plants

(a) Check that the ball size and ratio meets the referenced, “American Standard for Nursery Stock.”

(b) Check that the container retains the ball unbroken and that the container is sufficiently rigid to hoild the ball shape and protect the root mass.

(4) Balled and platformed plants

(a) Check the the ball size and ratio meet the referenced, “American Standard for Nursery Stock.”

(b) Check that the root ball is completely wrapped. securely laced and securely fastened to wood platform.

(c) Reject plant material with broken or cracked balls.

(5) Bare root plants

(a) Check that the minimum root spread meets the referenced, “American Standard for Nursery Stock.”

(b) Check that the root system is well branched and characteristic of the variety specified. Ensure the roots show a smooth cut and were not pulled from the ground.

(c) Check that the root system is protected from drying out.

(6) Container grown plants

(a) Check that the container size meets the referenced, “American Standard for Nursery Stock.”

(b) Check that the plant was grown in the container sufficiently long for new fibrous roots to develop and for the root mass to retain its shape when removed from the container. Check that the container is sufficiently rigid to hold the ball shape and protect the root mass.

(7) Soil amendments. Make similar check as stated in section, “SOIL AMENDMENTS,” 2E-02b.(4).

(8) Topsoil. Make similar check as stated in section, “DELIVERED TOPSOIL,” 2E-02b.(4)(c)1.

(9) Organic mulch. Check mulch for type and size and free from weeds and mold.

(10) Geotextile for weed control. Check that the geotextile provides a weed barrier and is water permeable.

c. Planting Times And Conditions

(1) Planting times. Check that the seasonal requirements for the plant material are being met in the contract work schedule.

(2) Planting conditions

(a) Check for favorable soil and weather conditions to give beneficial results.

(b) Stop the planting operation during excessive drought, moisture, wind and other unfavorable condition.

d. Site Preparation

(1) Finished grading. Check that the completion of the finished grading occurs prior to commencing with the installation of plant material. Make similar check as stated in section, "FINISHED GRADING," 2E—02d.(9).

(2) Protection. Check that the turf areas, existing plant material, pavement and facilities are protected from damage by the contractor.

(3) Layout

(a) Check that the layout of plant locations and bed outlines are in accordance with the drawings and specifications.

(b) Check for conflict with utilities or underground structures, ditches and have plants relocated as necessary.

e. Excavation

(1) Plant pit

(a) Check depth and diameter in accordance with the specifications.

(b) Check for vertical sides and flat uncompacted bottoms.

(2) Percolation Test. Check that a percolation test is performed in selected plant pits in each area to be planted.

(3) Plant bed

(a) Check that the entire root system of grass in the plant bed area has been removed.

(b) Check slope and drainage of plant bed.

(c) Make similar check for tillage of the plant bed as stated in section, "TILLAGE," 2E-02d.(7).

(d) Make similar check for placement of backfill soil mixture as stated in section "PLACEMENT OF TOPSOIL," 2E-02d.(8).

f. Backfill Soil Mixture. Check that the backfill soil mixture consists of topsoil and is proportioned in accordance with the recommendations of the soil test.

g. Setting Plants

(1) Check that the plant material is set plumb and even with the depth at which it is grown.

(2) Check method of backfilling each plant pit.

(3) Ensure material that is not biodegradable is removed from the root ball and the plant pit.

(4) Check that for balled and burlapped plants the burlap is rolled back from the top one-third of the root ball.

(5) Check that bare root plant material is muddied into the backfill soil mixture in the pit.

h. Earth Saucer. Check that the height of the earth saucer is a minimum four inches high for retaining water and is constructed along the edge of the plant pit.

i. Staking And Guying. Check for proper staking and guying of all trees and ensure the guying wires do not girdle the trees.

j. Mulch

(1) Check the time limitation for placing mulch.

(2) Check that the mulch covers the entire earth saucer area or plant bed.

k. Trunk Wrap

(1) Check the time limitarion on trunk wrap.

(2) Check that trees with a trunk caliper greater than one and one-half inches are wrapped.

l. Pruning

(1) Check the installed plant material for proper pruning. Ensure the typical growth habit is retained. Ensure clean cuts are made flush to the parent trunk.

(2) Ensure “headback” cuts at right angles to the line of growth are not permitted.

(3) Ensure the trees are not “poled” or the leader removed or “topped off.”

(4) Reject trees that are poled, topped off or headback.

m. Watering. Check that each installed plant is ‘water-in* to remove air pockets in the backfill soil mixture.

n. Maintenance During Planting Operation. Check the installed plants are maintained during the planting operation. Make similar check as stated in section, “MAINTENANCE DURING THE ESTABLISHMENT PERIOD,” 2E-03p. (2).

o. Restoration. Clean Up, Protection. Make similar check as stated in section, 'RESTORATION, CLEAN UP, PROTECTION," 2E-02i.

p. Plant Establishment Period

(1) Commencement

(a) Record the commencement date and length of the period for the planted area.

(b) Check the method used to identify the areas with different extablishment periods.

(2) Maintenance during the establishment period

(a) Repair. Check that plant material is straightened and the stakes and guys are tightened. Check that trunk wrap is repaired, that mulch is repair or replaced as required and the planted area is protected from erosion. Ensure weeds, insects and diseases are eradicated Check plant material for girdling of the trunk.

1. Obtain the maintenance report.

2. Obtain the maintenance instruction.

(b) Fertilizing

1. Check the timing of the application with the advent of winter dormancy.

2. Check the method and rate of application.

3. Check that dry fertilizer does not adhere to the plant material.

(d) Settlement

1. Check that topsoil is added to maintain the grade and earth saucer at which it was grown.

2. Check that each plant is maintained at the sane growing depth at which it was grown.

3. Check that plants showing serious settlement are replanted.

q. Unhealthy Plants

(1) Check plants for being in a healthy growing condition. A plant is considered unhealthy when the main leader has died back or twenty-five percent of the crown is dead.

(2) Check that unhealthy or dead plants are removed immediately.

(3) Check that plants are replaced when seasonal conditions permit.

r. Warranty

(1) Ensure furnished plants are guaranteed to he in a vigorous growing condition for a period of twelve months.

(2) A plant is replaced one time under this guarantee.

(3) Obtain written calendar time period for the guarantee.